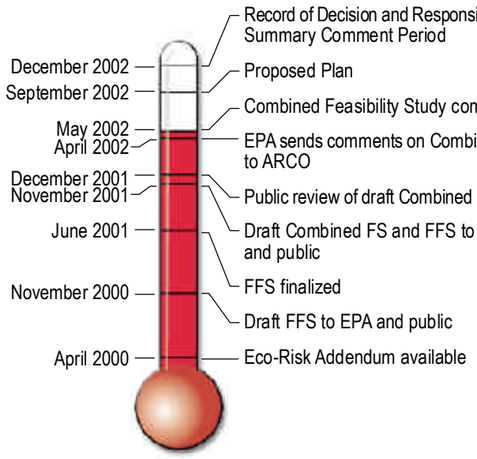
It is important to note that up to this point, the evaluation has not included State and Community Acceptance. These are the final two (of the nine) evaluation criteria. How the State and the Community feel about the Proposed Plan are two very important considerations. State and local officials, as well as community members, will assist EPA in determining what approach works best for the community in the long run. EPA will continue to work closely with State and local officials as well as the affected communities throughout this process.

EPA is eager for public input on the Proposed Plan. After careful review and consideration of comments from the State and the community, the next step will be to write a Record of Decision (ROD) to document the final cleanup plan. Finally, design and construction will implement the selected remedy.

What is the Schedule?

The draft schedule, shown below, is subject to change as the process of determining the best approach for this site moves forward.



U.S. Environmental Protection Agency
U.S. EPA Federal Building
10 West 15th Street, Suite 3200
Helena, MT 59626

How Can I Get Involved?

Through its Technical Assistance Grants (TAG) program, EPA funds the Clark Fork River Technical Assistance Committee (CFRTAC) to review the results of EPA studies and relay them to the community. CFRTAC consists of representatives of various interest groups and citizens at large.

A significant component of alternative selection is state and community acceptance. EPA is working closely with state and local representatives to be sure the selected alternative meets cleanup and community goals to the greatest extent possible. Making your opinion known is important for the cleanup selection process.

Where Do I Find More Information?

For more detailed information, review materials available at the EPA Superfund Records Center or the Public Library. Or, visit our web site at http://www.epa.gov/region08/superfund/sites/mt/milltown.html, or e-mail us at milltown@epa.gov. Interested members of the public are also encouraged to contact the community group, CFRTAC, for additional information or visit their website: clarkforkoptions.org.

Milltown Site Contacts

Russ Forba, Project Manager, Reservoir
U.S. EPA Federal Building
10 West 15th Street, Suite 3200
Helena, MT 59626
(406) 457-5042; or e-mail: forba.russ@epa.gov

Diana Hammer, Community Involvement Coordinator
U.S. EPA (*same address as above*)
(406) 457-5040; or e-mail: hammer.diana@epa.gov

Keith Large, State Project Officer
Montana Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620
(406) 444-5875; or e-mail: klarge@state.mt.us

EPA United States Environmental Protection Agency

U.S. Environmental Protection Agency Region 8 • Montana Office, Helena • April 2002

Milltown Reservoir Sediments Superfund Site:
Combined Feasibility Study

Milltown Reservoir Combined Feasibility Study

Drawing from previously completed studies (Draft Feasibility Study–1996 and the Focused Feasibility Study–2001), EPA is now finalizing the Combined Feasibility Study (CFS) for the Milltown Reservoir. The CFS describes the various cleanup options to address the problem of contaminated sediments currently stored behind the Milltown Dam.

Ten cleanup alternatives were identified and evaluated in the CFS. A description of each of these options is shown on page 3. Of these ten options, two are receiving the most serious consideration: *Alternative 2A–Modification of the Dam and Operational Practices plus Groundwater Institutional Controls,* and *Alternative 7A2–Dam Removal with Partial Sediment Removal of the Lower Reservoir plus Groundwater Institutional Controls and Natural Attenuation within the Aquifer Plume*.

EPA is working closely with the State of Montana, Missoula City and County, and the local communities of Bonner and Milltown as we move towards a cleanup decision for the Milltown Reservoir. A Record of Decision is expected by the end of 2002.

Background

The Milltown Dam, built at the confluence of the Clark Fork and Blackfoot Rivers in 1907, acts as a repository for sediment and mining wastes. Sediment from upstream mining activities accumulated in the reservoir, and caused the formation of a groundwater arsenic plume that impacted Milltown's drinking water supply. The reservoir was listed as a Superfund Site in 1983.

The Milltown Reservoir Sediments Superfund Site is divided into three Operable Units: Clark Fork River, Milltown Water Supply, and Milltown Reservoir Sediments. The Clark Fork River Operable Unit is being addressed in a separate cleanup process. The Milltown Water Supply Operable Unit was addressed in a previous response action to install a new drinking water system in 1984. The Milltown Reservoir Sediments Operable Unit is addressed in this fact sheet, and this is a very important time for the public to provide input. EPA is encouraging local, state, and federal agencies, industry, and community members to work together to come up with a sound cleanup plan.

How Did It Become a Superfund Site?

Milltown Dam was completed in 1907 to generate hydroelectric power for the sawmill at Bonner, and later, power for Missoula. The dam can produce a maximum of about 3 megawatts of power for NorthWestern Energy (formerly the Montana Power Company). Upstream areas were mined for copper and other minerals as early as 1864. A major flood in 1908, and later floods and storm events, transported large quantities of mining and smelting wastes downstream into the reservoir, where much settled as sediment. Over time, more than 6 million cubic yards of sediments have built up behind the dam. Mine wastes in the sediments contain elevated concentrations of metals and arsenic.

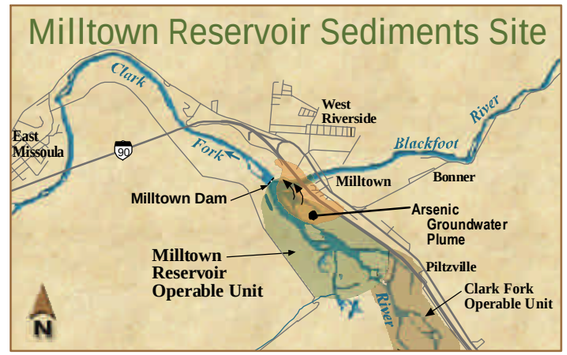
Human health risks are from arsenic-contaminated drinking water. There are also risks to downstream aquatic life, primarily from copper. These risks are greatest during ice scour events.

What Has Been Done So Far?

Between 1982 and 1992, several investigations were conducted in the Milltown area to identify the source and extent of the groundwater arsenic and characterize the soils, groundwater, surface water, sediments, and biological resources in and near the Milltown Reservoir Sediments Operable Unit. This information was published in a Remedial Investigation report in 1995.

Guided by the findings of the Human Health and Ecological Risk Assessments and Applicable or Relevant and Appropriate Requirements (ARARs) standards identified for the site, 24 alternatives were evaluated through a process described in the Draft Feasibility Study (FS) Report (ARCO 1996). Just before the FS was completed, a series of unforeseen climactic conditions developed in western Montana. Subzero winter temperatures froze large sections of the rivers; warm Chinook winds followed with a rain-on-snow event that caused the formation of massive ice flows and facilitated their movement downstream. Operators of the Milltown Dam, concerned about ice damage to the flashboard system, rapidly reduced reservoir pool level by 8 feet. Large chunks of ice settled on the sediments in the reservoir. Rising water from the rain event moved the ice, causing it to scour sediments in the reservoir. The increased river flows transported the sediments downstream.

To evaluate the impacts of the sediment release on aquatic life downstream of the dam, an addendum to the original Ecological Risk Assessment was produced by EPA. This addendum demonstrated unacceptable risks to aquatic life during high flow events like the 1996 ice scour event. At the same time, EPA asked ARCO to initiate a supplemental Focused Feasibility Study (FFS) to augment the draft FS. A total of 10 alternatives were examined in the FFS, which was released in



June 2001. These two Feasibility Studies have been combined into the "Combined Feasibility Study" (CFS). The draft CFS was released for public review an comment in November 2001. EPA is now finalizing the CFS.

What Did the Combined Feasibility Study Show?

The 10 alternatives evaluated in the CFS (seven main alternatives with sub-alternatives) ranged from modifying the dam and operational processes to completely removing the dam and sediments. By the end of this preliminary analysis, Alternative 2A, Modification of Dam and Operational Practices; and Alternative 7A2, Dam Removal and Partial Sediment Removal (Lower Reservoir Area), scored most favorably under Superfund's evaluation criteria. It is important to note that at this point, all criteria are considered equally; however, in its final decision, EPA has the authority to give some criteria more weight than others.

Alternative 2A, which modifies the dam with an inflatable crest and imposes groundwater ICs, etc., achieved the highest overall score based on EPA's seven criteria for evaluating cleanup actions. This alternative is generally favored by ARCO, NorthWestern Energy, and some residents living very close to the reservoir (i.e., Bonner area). It meets the threshold criteria (see box at right), scores moderate for long-term effectiveness and permanence, and scores high for short-term effectiveness, cost, and implementability. It also requires significant ongoing operation and maintenance. The cost of this alternative is about $20 million.

Alternative 7A2, which removes the dam and the most contaminated sediments in the lower reservoir, also ranked high in EPA's criteria and is generally favored by the larger Missoula area community, including the local elected officials. It scores high in long-term effectiveness and permanence because it does not require significant ongoing maintenance (the dam and sediment are removed). However, the score for short-term effectiveness was low-moderate because of potential negative impacts on downstream aquatic life during dredging and was rated moderate for implementability. The cost of this alternative is about $93 million.

Implementation of Alternative 7A2 will also allow recovery of the aquifer within a much shorter time period (10-20 years) versus Alternative 2A (200-2000 years). Recovery of the aquifer is much quicker under Alternative 7A2 because the major source of groundwater contamination (reservoir sediments) and the hydraulic pressure driving the arsenic into the aquifer is greatly reduced. To better understand how this alternative might be implemented, EPA is currently examining different transportation (rail, slurry line, and truck) and disposal (in a local repository versus disposal at Opportunity Ponds) options.

The two main alternatives described above (Alternative 2A and 7A2) would protect downstream aquatic life from ice scour events and would also require maintenance of the alternate water supply for affected area residents (thus, addressing human health concerns). These two alternatives offer different advantages and disadvantages. EPA released the draft CFS for public review and comment in November 2001. EPA has considered the comments and now is revising the CFS. EPA expects to release the final CFS in May 2002.

An alternative that also ranked high in the EPA criteria was Alternative 3A, modification of dam and operational practices with erosion/scour protection. Although this tied overall with Alternative 7A2, it is not favored because it adds very little additional environmental protection–but with significant cost increases–over Alternative 2A. EPA has received numerous public comments advocating sediment removal and leaving the dam in place. This option does not score highly in the CFS because it is very costly, does not provide a permanent remedy (in the future, there would be necessary dam upgrades and periodic dredging), and offers no increase in environmental protection over other alternatives.

Independent of the Superfund evaluation, which addresses potential contaminant releases only, the dam is also subject to regulation governed by the Federal Energy Regulatory Commission (FERC). Should the dam remain, FERC inspections are required and the dam must comply with any improvements dictated by safety concerns or related ecological issues such as fish passage. The CFS Alternatives include descriptions of some of the improvements in the descriptions of the dam actions. These potential actions are mandated by FERC and are independent of EPA's action. The description of these activities may change as FERC proceeds through its full licensing process. In April 2002, FERC granted NorthWestern Energy (formerly Montana Power Company) a one-year extension on its operating license for the Milltown Dam. In its ruling, FERC said Northwestern could not be expected to make a decision about whether or not to seek a new operating license until EPA makes a decision on whether or not to remove the Milltown dam.

What Happens Next?

EPA's initial evaluation of the cleanup alternatives was based on the first seven (of nine) selection criteria (see "EPA's Evaluation Criteria" below). These seven are a mixture of technical, legal, and policy concerns, and are known as the Threshold and Balancing Criteria. These are criteria that any cleanup plan must meet. Upon completion of the CFS, EPA will again evaluate the Alternatives against these seven criteria. The alternative that EPA believes best meets these criteria will be offered as EPA's preferred Alternative in the Proposed (cleanup) Plan. EPA expects this Proposed Plan to be available for public comment in late September 2002.

EPA's Evaluation Criteria

Threshold Criteria—Must be Met

1. Overall Protection of Human Health and the Environment—*Must attain a level of protectiveness*
2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)—*Includes state and federal regulations; where ARARs cannot be met, a waiver may be considered*

Balancing Criteria—Must be Considered

3. Long-Term Effectiveness and Permanence
4. Reduction of Toxicity, Mobility, and Volume
5. Short-Term Effectiveness
6. Implementablity
7. Capital and Operating and Maintenance Cost

Modifying Criteria—Must Also be Considered

8. State Acceptance
9. Community Acceptance

Cleanup Options to be Considered in the Combined Feasibility Study

Alternative	Action to Dam*	Action to Channel and Floodplain Sediments	Action to Groundwater Plume
1 – No Further Action	Safety Upgrade/ Fish Passage	None	Maintain Replacement Water Supply
2A – Modification of Dam and Operational Practices plus Groundwater Institutional Controls (GW ICs)	Safety Upgrade/ Fish Passage/ Inflatable Rubber Dam	None	Maintain Replacement Water Supply Controlled GW Area
2B – Modification of Dam and Operational Practices plus GW ICs and Containment and Natural Attenuation within the Aquifer Plume	Safety Upgrade/ Fish Passage/ Inflatable Rubber Dam	None	Slurry Wall, plus actions listed above for 2A
3A – Modification of Dam and Operational Practices with Scour Protection plus GW ICs	Safety Upgrade/ Fish Passage/ Inflatable Rubber Dam	*Channel*: Soft Streambank Stabilization *Floodplain*: Revegetation	Maintain Replacement Water Supply/ Controlled GW Area
3B – Modification of Dam and Operational Practices with Channelization plus GW ICs and Containment and Natural Attenuation within the Aquifer Plume	Safety Upgrade/ Fish Passage/ Inflatable Rubber Dam	*Channel*: Limited Sediment Removal/Channelization with Armoring plus Periodic Sediment Removal *Floodplain*: None	Slurry Wall/Maintain Replacement Water Supply/Controlled GW Area
5 – Dam Removal, Partial Sediment Removal with Channelization and Leachate Collection/ Treatment, plus GW ICs and Natural Attenuation within the Aquifer Plume	Removal	*Channel*: Limited Sediment Removal in Channels Armor Channels *Floodplain*: None	Leachate Collection/ Maintain Replacement Water Supply/ Controlled GW Area
6A – Modification of Dam and Operational Practices with Initial Total Sediment Removal of the Lower Reservoir and Periodic Sediment Removal Thereafter, plus GW ICs and Natural Attenuation in the Aquifer Plume	Safety Upgrade/ Fish Passage/ Inflatable Rubber Dam	*Channel*: Removal *Floodplain*: Total Removal below Duck Bridge	Source Removal/ Maintain Replacement Water Supply/ Controlled GW Area Eventual GW Cleanup Possible
6B – Modification of Dam and Operational Practices with Total Sediment Removal of the Entire Reservoir plus GW ICs and Natural Attenuation within the Aquifer Plume	Safety Upgrade/ Fish Passage/ Inflatable Rubber Dam	*Channel*: Total Sediment Removal of Lower Reservoir *Floodplain*: Total Removal below Duck Bridge	Source Removal/ Maintain Replacement Water Supply Controlled GW Area Eventual GW Cleanup Possible
7A1 – Dam Removal with Total Sediment Removal of the Lower Reservoir plus GW ICs and Natural Attenuation within the Aquifer Plume	Removal	*Same as 6B, above*	*Same as 6B, above*
7A2 – Dam Removal with Partial Sediment Removal of the Lower Reservoir plus GW ICs and Natural Attenuation within the Aquifer Plume	Removal	*Channel*: Partial Sediment Removal of Lower Reservoir *Floodplain*: Total Removal of Sediment Accumulation Area I	*Same as 6B, above*
7B – Dam Removal with Total Sediment Removal of the Entire Reservoir plus GW ICs and Natural Attenuation within the Aquifer Plume	Removal	*Channel*: Sediment Removal from Entire Reservoir; Channel Reconstruction *Floodplain*: Sediment Removal	*Same as 6B, above*

*Dam modifications: upgrading the dam to withstand the probable maximum flood (PMF); installing a fish ladder or performing trap-and-haul for fish passage; and installing an inflatable rubber dam to replace the existing flashboard assembly. It should be noted that all upgrades of the dam for safety reasons or fish passage are dictated under FERC's authority, not Superfund authority. These items (i.e., upgrades, fish passage) have been included in the FS for cost comparison only.
Note: Alternative 4 was eliminated from consideration. The alternative numbers correspond with the Focused Feasibility Study.